PRELIMINARY INSTRUCTIONS

FOR

VIBRATOR UNIT PE-125-BX

RESTRICTED

PUBLISHED BY AUTHORITY
OF
THE CHIEF SIGNAL OFFICER
ORDER NO. 2241-CHI-42

PRELIMINARY INSTRUCTIONS

FOR

VIBRATOR UNIT PE-125-BX

Manufactured for the

RAULAND CORPORATION, CHICAGO, ILLINOIS

by

ELECTRONIC LABORATORIES, INC.
INDIANAPOLIS, INDIANA

RESTRICTED

NOTICE:—This document contains information affecting the national defense of the United States within the meaning of the Espionage Act (U.S.C. 50:31, 32). The transmission of this document or the revelation of its contents in any manner to any unauthorized person is prohibited. The information contained in documents marked RESTRICTED will not be communicated to the public or to the press, but it may be communicated to any person known to be in the service of the United States, and to persons of undoubted loyalty and discretion who are cooperating in the Government work (AR-380-5).

PUBLISHED BY AUTHORITY

OF

THE CHIEF SIGNAL OFFICER

ORDER NO. 2241-CHI-42

Catalog No. 109 Printed in U. S. A. 6/30/42

SAFETY NOTICE

SAFETY TO HUMAN LIFE

Operation of this equipment involves the use of high voltages which are dangerous to life. Operating personnel must at all times observe all safety regulations. Do not change fuses or make adjustments inside equipment with high voltage supply on.

KEEP AWAY FROM LIVE CIRCUITS

Do not operate the equipment with cover or fuse cover plate removed.

CONTENTS

SECTION I—DESCRIPTION

Paragraph — Page

1. General 2
2. Mechanical 2
   a. Mounting Chassis 2
   b. Chassis Base 2
   c. Mounting Plate Assembly 2
   d. Cover Assembly 2
   e. Dimensions and Weight 3
3. Major Components 3
4. Electrical Description 3

SECTION II—INSTALLATION

5. Unpacking 6
6. Mechanical 6
   a. Mounting Plate Installation 6
   b. Check 6
   c. Vibrator Unit Installation 6
7. Electrical 6

SECTION III—PREPARATION FOR USE

8. Precautions 6
9. Caution 6
10. Input Battery Cable Installation 6

SECTION IV—OPERATION

11. Operation of Unit 7

SECTION V—MAINTENANCE

12. Inspection to Determine Proper Operation 7
13. Replacing Parts 7
    a. Vibrator 7
    b. Fuses 7
    c. Tubes 7
    d. Other Components 7
14. Field Repairs 8-9
15. Replaceable Parts List 10
16. List of Manufacturers 11

ILLUSTRATIONS

Figure — Page

1. Photograph, Vibrator Unit PE-125-BX, Exterior View 1
2. Photograph, Vibrator Unit PE-125-BX, Exterior View, Cover Removed 4
3. Photograph, Vibrator Unit PE-125-BX, Chassis, Bottom View 5
4. Vibrator Unit PE-125-BX, Wiring Diagram 12
5. Vibrator Unit PE-125-BX, Schematic Diagram 13
6. Vibrator Unit PE-125-BX, Outline Drawing 14
7. Vibrator Unit PE-125-BX, Test Schematic Diagram 15

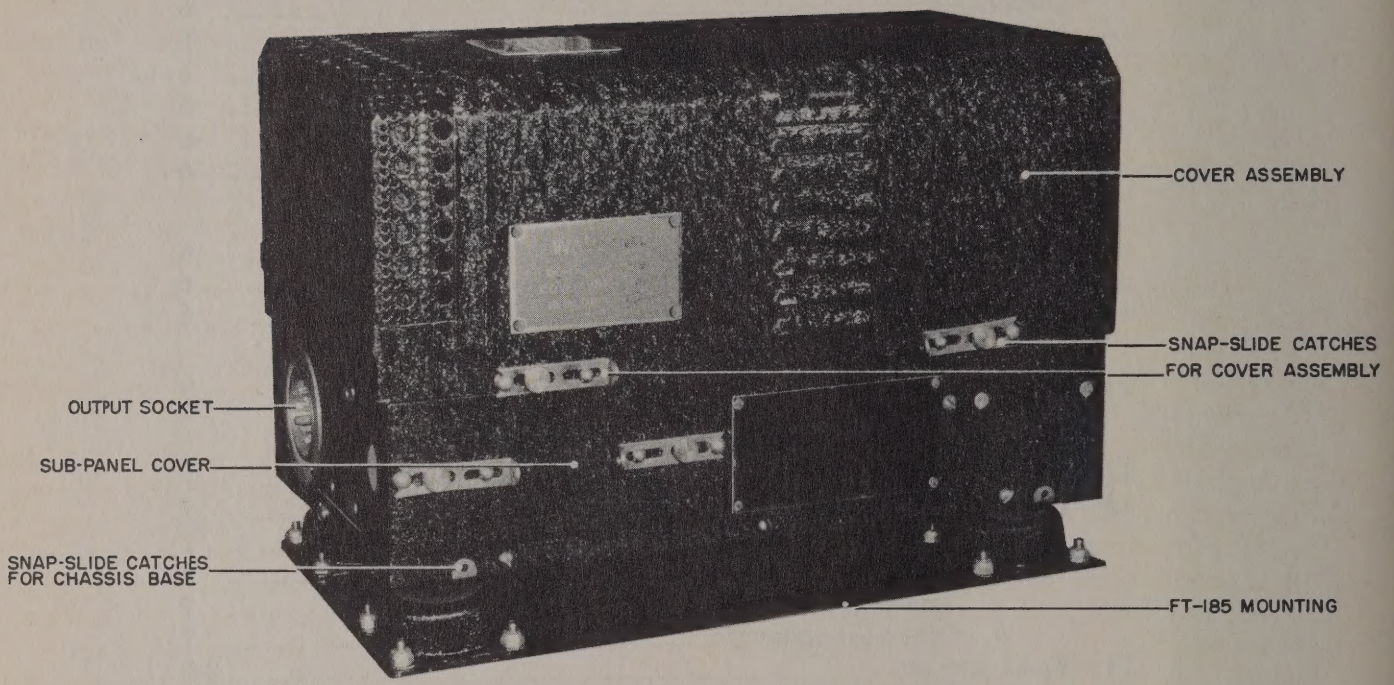


FIG. 1—VIBRATOR UNIT PE-125-BX, EXTERIOR VIEW

PRELIMINARY INSTRUCTIONS
for
VIBRATOR UNIT PE-125-BX

SECTION I
DESCRIPTION

1. GENERAL.—The Vibrator Unit PE-125-BX is designed to provide power for the radio transmitter section of the Radio Set SCR-245 from either of two input voltages, 12 volts d-c or 24 volts d-c. The output voltages with either input are 475 volts d-c at 200 milliamperes to supply the transmitter plates and 8 volts d-c at 4.5 amperes to supply the transmitter filaments.

2. MECHANICAL.—The vibrator unit consists essentially of the following assemblies:

a. Mounting chassis.—The chassis is made in the form of a shallow steel box with closed sides and top, and open at the bottom. All electrical components are mounted on or in this box.

(1) *Top panel.*—On the top panel of the chassis are mounted one power transformer (8), one choke (11) two rectifier tubes (12-1 and 12-2), two resistors (14-1 and 14-2), three capacitors (6, 7-1, and 7-2), and the vibrator (1). The rectifier tube sockets are mounted below the top panel and the tubes (12-1 and 12-2) are held firmly in their sockets by means of tube clamps which also are arranged to prevent splashing water from entering the chassis. The two resistors (14-1 and 14-2) are completely enclosed in a vertical housing affixed to one end of the top mounting panel. The finish on this housing is so arranged as to facilitate the radiation of heat outward and away from the other components of the unit. The vibrator (1) is encased in a metal box provided with two snap-slide catches. The vibrator (1) plugs into two six-prong sockets and is locked in place by the snap-slide catches. Two 4 μf capacitors (7-1 and 7-2) are mounted next to the vibrator (1). They are held in place by two vertical brackets. Adjacent to these capacitors (7-1 and 7-2) is a large power transformer (8) and next to it the output filter choke (11). The 4-4 μf capacitor (6) is mounted on one corner of the panel by means of studs which are an integral part of the capacitor case.

(2) *Side panel.*—A recessed panel (See Fig. 1, page 1) is provided on one side of the chassis. A flat metal cover for this recessed panel is held in place by two snap-slide catches. Mounted on the sub-panel are two input terminals, high voltage fuses, low voltage fuses, and a switch. The low voltage fuses are of the cartridge type and are mounted in a block of bakelite which serves as an extractor. Fuses of 30 ampere rating are required for 12-volt d-c operation and 15 ampere rating for 24-volt d-c operation. The unit is shipped with 30 ampere fuses installed and therefore is ready for 12-volt d-c operation. The active fuse is held in the fuse clips and the other is a spare. The active high voltage fuse is contained in a molded phenolic fuse receptacle while the spare is held by two spring clips on the inside of the cover plate. A switch composed of two 4-pole, double throw, toggle switches, and equipped with a spring locking pin, is mounted on the extreme right of the sub-panel. This switch must be thrown to the correct input voltage; that is, 12-volt d-c or 24-volt d-c, depending on the voltage of the vehicle battery. The two positions of the switch are marked on the sub-panel.

(3) *End panel.*—The output socket, SO-80, is located on the end of the chassis which is adjacent to the above mentioned sub-panel. A hole is cut through this end panel leading to the sub-panel to accommodate the input leads with their cable clamp.

(4) *Chassis interior.*—All electrical components other than those described above, are mounted in the interior of the chassis. All wiring and connections are accessable when the chassis base is removed from the chassis.

b. Chassis base.—The chassis base is attached to the chassis with 8-32 flat top, binding head screws. Four snap-slide catches are attached to the chassis base. These catches attach the chassis base to the four shock elements of the mounting plate assembly. The circuit label appears on the inside of the chassis base.

c. Mounting plate assembly.—This assembly is of the standard FT-185 type, consisting of a metal plate and four rubber shock elements.

d. Cover assembly.—The cover assembly is attached to the chassis with four snap-slide catches. The front section of the cover assembly, which fits over the resistor housing,

is perforated in order to dissipate heat from the resistors. Further ventilation is provided by the louvres on the side of the cover assembly immediately adjacent to the rectifier tubes.

e. Dimensions and weight.—The vibrator unit completely assembled has the following dimensions and weight with Mounting FT-185 attached:

Height	9- 1/2 "
Width	8- 5/8 "
Depth	13-13/16"
Weight	52 lbs.

3. MAJOR COMPONENTS.—The vibrator unit includes the following major components:

1 ea. mounting chassis
1 ea. chassis base
1 ea. mounting plate assembly FT-185
1 ea. cover assembly
2 ea. type RK-60 rectifier tubes
1 ea. type MTS-1019 vibrator
2 ea. 1/2 ampere fuses
2 ea. 30 ampere fuses
1 ea. fuse extractor
1 ea. spare parts kit
2 ea. preliminary instructions

4. ELECTRICAL DESCRIPTION.—Vibrator Unit PE-125-BX consists of four principal circuits:

1 Filament circuit
2 Receiver supply circuit
3 Input circuit
4 High voltage circuit

The filament circuit is arranged to maintain 8 volts d-c on the filament of the transmitter at a current drain of 4.5 amperes on either a 12-volt or 24-volt source. This value is obtained by a dropping resistor (14-1 and 14-2) so arranged that the 12-24-volt switch inserts proper sections of it for either input. Included in this filament is a filter consisting of a choke (10) and capacitor (4) whose purpose is to eliminate the ripple which exists on the input line, thus keeping the filament free of audio disturbance and, especially the microphone circuit, which is operated from this filament circuit, completely free of audio noise.

The receiver supply circuit is fed directly through the fuse (21 for 24-volt d-c or 22 for 12-volt d-c) to pin No. 23 of socket, SO-80. This furnishes 12 volts or 24 volts depending upon the voltage of the supply to the input circuit of the Radio Receiver BC-312, through the transmitter and receiver cables.

The primary circuit consists essentially of the tapped transformer primary, the switching system for converting the primary circuit from 12 to 24-volt operation, a splitting transformer (9) to equalize the load on the vibrator contacts, a vibrator (1) and its associated buffers (2-1, 2-2, 7-1, 7-2, and 5), a relay (19) to connect the primary circuit to the source of supply and dropping resistors (17 and 18) where required for 24-volt operation of the vibrator and relay. Roughly, its operation is as follows: The input voltage is applied between the center reed of the vibrator and the center tap of the transformer (8) primary, through the input fuse (21 for 24-volt d-c or 22 for 12-volt d-c) and the input relay (19). The vibrator actuating circuit is powered from the above components directly on 12 volts and through a dropping resistor (18) on 24 volts. The primary circuit is completed on each half of the vibrator through one 12-volt or one 24-volt section of the primary winding of the transformer (8), as the case may be, through the two halves in parallel of one winding of the splitting transformer (9), thence to separate parallel side contacts on the vibrator (1), through the center reed, and back to the source of supply. On the other half cycle of the vibrator, an exactly similar circuit is traced through the other half of the splitting transformer (9) and vibrator (1). The reversal of direction of flow in the primary produces alternating flux in the transformer iron. During the off contact periods, the decay of flux in the transformer (8) is governed by the various buffer capacitors. The splitting transformer (9) has the function of maintaining substantially equal current flow in the two sets of contacts. Any tendency for all current to flow through one set of contacts is immediately quenched by this unit. The relay (19) is actuated by the ON-OFF switch of the radio equipment or, on the VOICE position, by the PUSH-TO-TALK switch on the microphone.

The high voltage circuit is composed essentially of a standard full wave rectifier and filter system. Two type RK-60 rectifier tubes (12-1 and 12-2), each with its two plates paralleled, compose the full wave rectifier. The filaments of these tubes are supplied in series by a separate winding on the same transformer (8). The filter section is composed of a dual 4 μf, 800-volt oil capacitor (6) and a filter choke (11) of such value as to reduce the ripple voltage on the output to a satisfactory level. The high voltage fuse (20) is

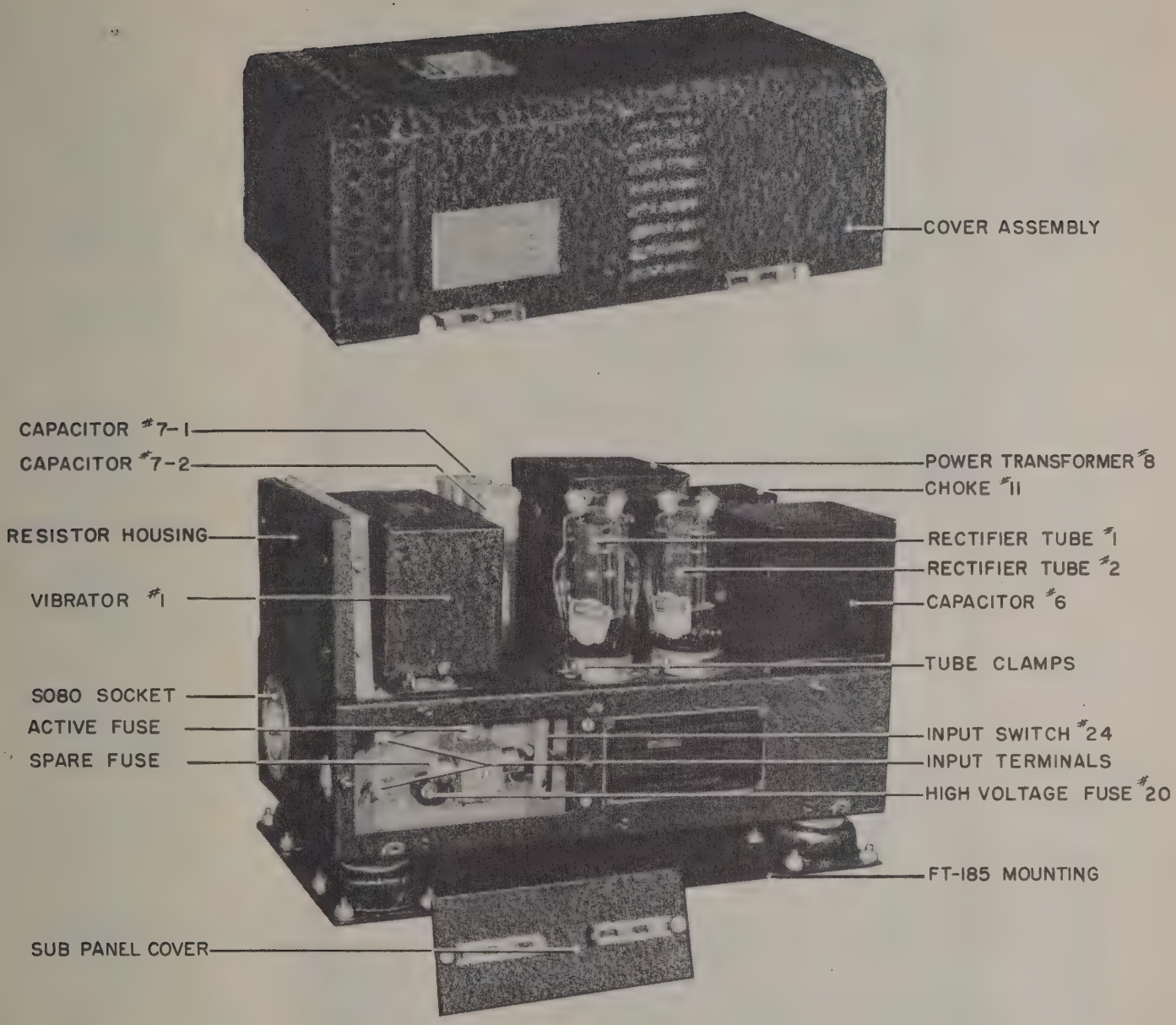


FIG. 2—VIBRATOR UNIT PE-125-BX, EXTERIOR VIEW, COVER REMOVED

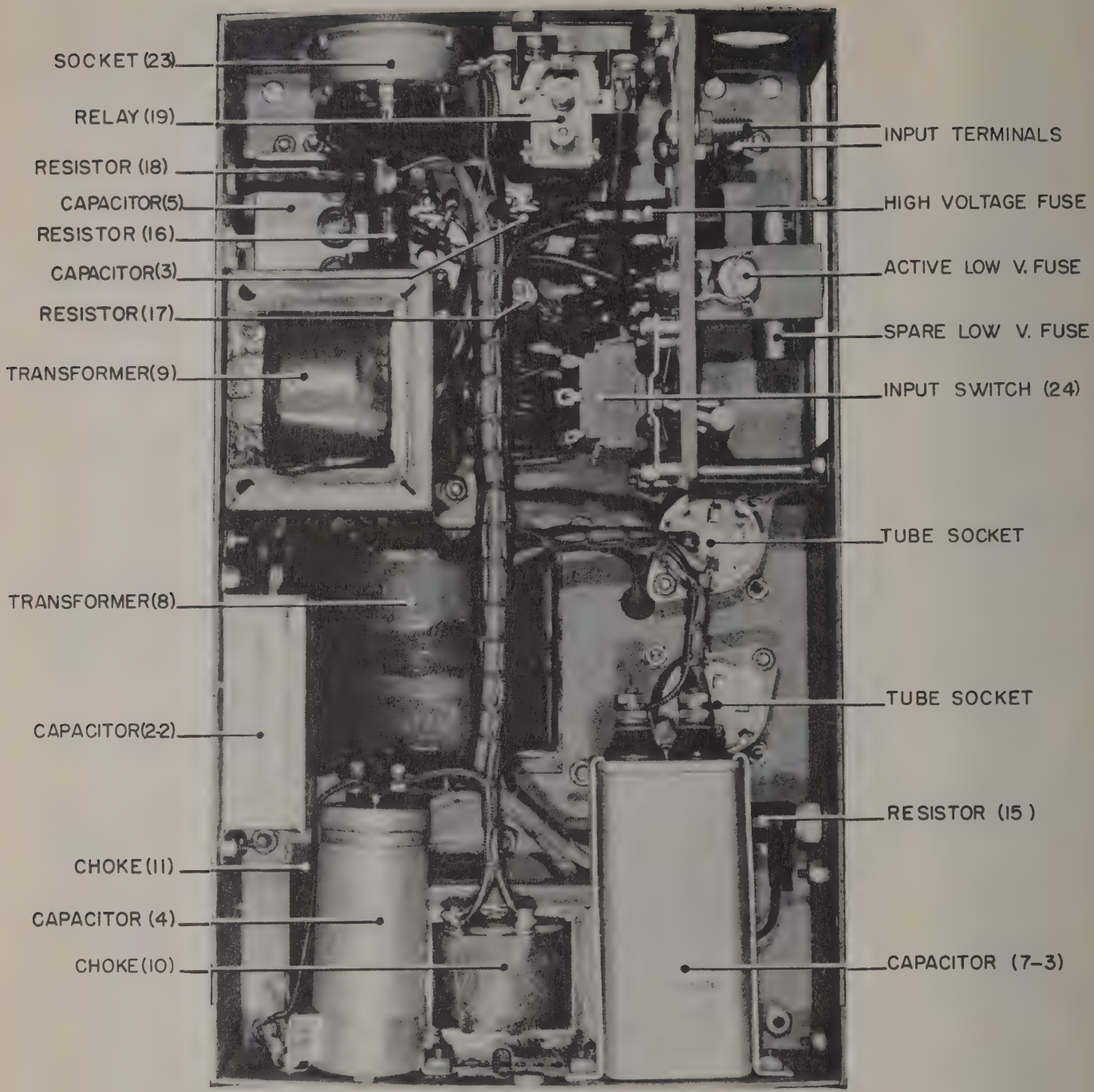


FIG. 3—VIBRATOR UNIT PE-125-BX, CHASSIS, BOTTOM VIEW

connected directly in the center tap lead of the transformer (8).

It is to be noted that the vibrator unit has no starting surge over the entire range of ambient temperature. It is also to be noted that the surge current into the first filter capacitor (first section of 6) is limited by the emission of the rectifier tube filaments (12-1 and 12-2), while the output surge current, that is, the surge current into the transmitter plate circuit, is eliminated entirely by the filter components, capacitor (6) and choke (11).

SECTION II

INSTALLATION

5. UNPACKING.—The vibrator unit and the Mounting FT-185 are packed in a corrugated paper box. The mounting plate is detached and placed on top of the vibrator unit. Open the box and remove Mounting FT-185, and then the vibrator unit.

6. MECHANICAL.—Vibrator Unit PE-125-BX is installed by means of Mounting FT-185. This mounting plate is bolted in place and the vibrator unit attached to it with four snap-slide catches provided for that purpose. Refer to figures 1 and 2 and proceed as follows:

a. Mounting plate installation.—Install mounting plate in vehicle by means of bolts fitting through four mounting holes.

b. Check.—Release four snap-slide catches on the cover and remove cover from the vibrator unit. Check snap-slide catches on the vibrator (1). Be sure they are securely fastened in place. Check tubes (12-1 and 12-2) for proper seating in sockets. See that tube clamps are securely tightened. Check plate caps for seating and tension. Replace cover and close snap-slide catches.

c. Vibrator unit installation.—Place vibrator unit on mounting plate assembly and fasten four snap-slide catches which hold the mounting plate assembly.

7. ELECTRICAL.—Select the proper cording diagram in the Instruction Book for Radio Set SCR-245. Make the connections to Vibrator Unit PE-125-BX by means of the socket, SO-80. MAKE ALL CONNECTIONS SHOWN ON THIS DIAGRAM EXCEPT THE INPUT BATTERY CABLE CONNECTIONS.

SECTION III

PREPARATION FOR USE

8. PRECAUTIONS.—

a. Make certain that both receiver and transmitter ON-OFF switches are thrown to the OFF position.

b. Remove fuse-well cover. Make certain that the correct low voltage fuse is installed for the input being used. If the input is 12 volts d-c, a 30 ampere fuse (22) must be used and if the input supply is 24 volts d-c, a 15 ampere fuse (21) must be used. The unit is shipped with 30 ampere fuses installed and therefore, is ready for 12-volt d-c operation.

c. Make certain that the voltage change-over switch is in the proper position for the input being used. That is, if the input supply is 12 volts d-c, the switch should be in the position marked 12 V and if the input supply is 24 volts d-c, the switch should be thrown to the 24 V position.

9. CAUTION.—BEFORE OPERATING THE RADIO EQUIPMENT, MAKE SURE THAT THE RECEIVER WILL OPERATE ON THE INPUT VOLTAGE BEING USED. IN OPERATING FROM 12 VOLTS D-C, THE RECEIVER MAY HAVE A 12-VOLT DYNAMOTOR, A 12-VOLT POWER PACK, OR A 12 AND 24-VOLT POWER PACK. IF A 12 AND 24-VOLT POWER PACK IS USED, MAKE CERTAIN IT IS SWITCHED TO 12 VOLTS D-C BEFORE ANY OPERATION IS ATTEMPTED. SIMILARLY, WHEN OPERATING FROM 24 VOLTS, THE RECEIVER MAY HAVE A 24-VOLT DYNAMOTOR, A 24-VOLT POWER PACK, OR A 12 AND 24-VOLT POWER PACK. IF A 12 AND 24-VOLT POWER PACK IS PROVIDED, MAKE CERTAIN IT IS SWITCHED TO THE 24-VOLT POSITION.

10. INPUT BATTERY CABLE INSTALLATION.—After strictly observing the precautions outlined in paragraphs 8 and 9, install the input battery cable as follows:

With the fuse-well cover removed, insert the battery cable through the opening in the end of the chassis (see figures 1 and 2) and make connections securely to the input binding posts, by clamping lugs of the cable under the wing nuts. MAKE SURE POLARITY IS OBSERVED. Connect the battery cable to the input junction box as shown on the proper cording diagram in the Instruction Book for Radio Set SCR-245.

SECTION IV

OPERATION

11. OPERATION OF UNIT.—The vibrator unit is operated automatically by Radio Set SCR-245. That is, the ON-OFF switches of the radio set also serve as the ON-OFF switches of the vibrator unit by operating the input relay incorporated in the vibrator unit.

SECTION V

MAINTENANCE

12. INSPECTION TO DETERMINE PROPER OPERATION.—With the transmitter ON-OFF switch thrown to ON, and the transmitter switch to VOICE, press the microphone switch. This should start the vibrator, and plate current should appear on the transmitter current meter. The value of this current will be dependent on the transmitter tuning. Switch the transmitter to TONE and then CW. In both positions, the ON-OFF switch of the radio equipment should operate the vibrator unit. In each of these positions, the plate meter on the transmitter will read only a few milliamperes. However, when the transmitting key is pressed, the plate meter should read approximately 120 milliamperes depending on the tuning of the antenna. The appearance of plate current indicates that the vibrator unit is furnishing both plate and filament voltages. For a complete schedule of filament and plate voltages, see the Instruction Book for Radio Set SCR-245.

13. REPLACING PARTS.—

a. Vibrator.—Remove the cover assembly by unfastening the four snap-slide catches. Unfasten the two snap-slide catches locking the vibrator in place. Pull the vibrator directly away from the chassis until the plugs in the base of the vibrator are disengaged from their respective sockets. To insert a new vibrator, first take note of the indexing of the vibrator sockets, then place the vibrator plugs into the sockets in such way as to maintain this indexing. *Do not force vibrator into sockets.* When the vibrator is properly plugged in, fasten the two snap-slide catches.

b. Fuses.—

(1) *Low voltage.*—Remove the active low voltage fuse by grasping the bakelite fuse block and pulling the fuse from the clips. Place the spare fuse in service by simply reversing the bakelite block and pushing the spare into the clips. Remove blown fuses from the bakelite block by loosening the screws at the ends of the block and withdrawing the fuses. Insert new fuses and lock in place by tightening these screws. In replacing blown fuses, always be sure to use the correct fuse for the input voltage being used. Fuses of 30 ampere rating (22) are required for 12-volt d-c operation and 15 ampere rating (21) for 24-volt d-c operation.

(2) *High voltage fuses.*—Remove the active fuse by unscrewing the retaining insert of the fuse receptacle with a screwdriver. Remove the spare fuse from its clips on the inside of the cover plate, place in the receptacle and replace the insert.

(3) *Warning.*—DO NOT REPLACE HIGH VOLTAGE FUSE WHILE POWER IS ON.

c. Tubes.—Remove the rectifier tubes (12-1 and 12-2) from their sockets, after removing the plate caps, by loosening the screws on each clamping ring and the two screws which fasten each clamping ring to the chassis, and pulling the tubes straight up from their sockets. In replacing tubes, make sure that the neoprene gasket is placed around the tube base so that it is firmly held by the clamping ring. This is to assure that no water can penetrate the interior of the chassis through the holes provided for the tubes.

d. Other components.—Parts other than those listed above will rarely, if ever, have to be replaced. Should any of these components

be replaced, make sure that all connections are clean and secure, and check the wiring with the wiring diagram Fig. 4 and schematic diagram Fig. 5.

14. FIELD REPAIRS.—

a. If operation is not obtained and the vibrator does not operate, check the following probable sources of trouble:

(1) Transmitter ON-OFF switch defective.

(2) Input fuse to vibrator unit blown.

(3) Vibrator defective.

b. If the vibrator operates, but transmitter does not, check the following:

(1) Output fuse in vibrator unit.

(2) Rectifier tubes in vibrator power unit.

c. If the above checks do not correct the trouble, remove the base plate of the vibrator unit and visually inspect for broken connections or damaged components. Broken connections should be replaced, making sure that the new connections are clean and secure. Damaged components should be replaced from the spare parts kit; if spare part is not available, the unit should be sent to a depot for repair.

d. A test of the circuit may be made by the following procedure. The following meters will be necessary for the test: a d-c voltmeter, 0 to 50 volts; a d-c voltmeter, 0 to 1000 volts; a d-c milliameter, 0 to 500 milliamperes; an a-c voltmeter, 0 to 100 volts; an a-c voltmeter, 0 to 2000 volts; a low resistance range ohmmeter. The a-c voltmeters should be of the rectifier type. With reference to the test schematic diagram Fig. 7, a point to point check may be made. The readings should approximate those in the following tables:

(1) Voltage test, rated input and load. Connect the 0 to 50 volt d-c voltmeter from point U to G and adjust the input voltage to exactly 12 volts d-c. Connect a variable load resistor and the 0 to 500 ma. d-c milliameter in series across the output points DD to EE. Turn the unit on and adjust the load resistor to give exactly 200 ma. d-c with exactly 12 volts d-c input. With this 200 milliampere load and the input at 12.0 volts d-c the following readings should be obtained:

Points	*Reading*	*Meter*
(a) AA to DD	475 volts d-c ± 5%	0-1000 d-c voltmeter
(b) BB to CC	1000 volts a-c approx.	0-2000 a-c voltmeter
(c) F to L	21.5 volts a-c approx.	0-100 a-c voltmeter
(d) F to P	21.5 volts a-c approx.	0-100 a-c voltmeter
(e) F to N	9.8 volts a-c approx.	0-100 a-c voltmeter
(f) F to M	9.8 volts a-c approx.	0-100 a-c voltmeter

(2) Voltage test, rated input, no load. Remove the load resistor and d-c milliameter. Turn the unit on and adjust the input to 12 volts d-c exact. Thus, with no load and the input at 12.0 volts d-c the following readings should be obtained:

Points	*Reading*	*Meter*
(a) AA to DD	590 volts d-c approx.	0-1000 d-c voltmeter
(b) BB to CC	1130 volts a-c approx.	0-2000 a-c voltmeter
(c) F to L	24.0 volts a-c approx.	0-100 a-c voltmeter
(d) F to P	24.0 volts a-c approx.	0-100 a-c voltmeter
(e) F to N	10.8 volts a-c approx.	0-100 a-c voltmeter
(f) F to M	10.8 volts a-c approx.	0-100 a-c voltmeter

(3) Resistance test, 12 V position. Turn the unit off. Use a low resistance range ohmmeter. The following readings should be obtained:

Points		*Resistance*
(a)	A-3 to J	0.0 ohms
(b)	A-5 to H	0.0 ohms
(c)	W to V	0.0 ohms
(d)	B-3 to F	0.0 ohms
(e)	Q to S	0.3 ohms
(f)	D to E	0.1 ohms
(g)	F to D	0.05 ohms
(h)	F to E	0.05 ohms

(4) Resistance test, 24 V position. Keep the unit turned off. Use a low resistance range ohmmeter. The following readings should be obtained:

Points		*Resistance*
(a)	A-3 to J	infinity
(b)	A-5 to H	infinity
(c)	W to V	50.0 ohms
(d)	B-3 to F	20.0 ohms
(e)	Q to S	3.0 ohms
(f)	D to E	0.2 ohms
(g)	F to D	0.1 ohms
(h)	F to E	0.1 ohms

(5) Resistance test, either 12 V or 24 V position. Keep the unit turned off. Use a low resistance range ohmmeter. The following readings should be obtained:

Points		*Resistance*
(a)	U to G	infinity
(b)	F to Q	0.4 ohms
(c)	A-4 to A-5	0.08 ohms
(d)	D to A-4	0.04 ohms
(e)	D to A-5	0.04 ohms
(f)	A-2 to A-3	0.06 ohms
(g)	E to A-2	0.03 ohms
(h)	E to A-3	0.03 ohms
(i)	C to B-4	10.0 ohms
(j)	B-4 to G	0.0 ohms
(k)	B-4 to B-3	6.5 ohms
(l)	X to Y	0.25 ohms
(m)	X to Z	0.25 ohms
(n)	AA to BB	46.0 ohms
(o)	AA to CC	49.0 ohms
(p)	BB to CC	95.0 ohms
(q)	X to DD	12.0 ohms
(r)	AA to EE	1.4 ohms
(s)	DD to EE	50,000 ohms
(t)	EE to G	infinity
(u)	DD to G	infinity

VIBRATOR UNIT PE-125-BX

REPLACEABLE PARTS

Ref. No.	*Electronic Type No.*	*Name of Part*	*Description*	*Function*	*Mfr.*
2-1 2-2	C-43	Capacitor	Electrolytic a-c 8 to 11 μf 110 v a-c	Vibrator buffer	1
3	C-113	Capacitor	Paper d-c .5 μf 50 v d-c	Suppression network, vibrator actuating circuit	2
4	C-125	Capacitor	Electrolytic d-c 300 μf 35 v d-c	Ripple filter in transmitter filament circuit	1
5	C-237	Capacitor	Oil a-c .25-.25-.25-.25 μf 50 v a-c	Vibrator point condenser assembly	3
6	C-250	Capacitor	Oil d-c 4-4 μf 800 v a-c	Ripple filter in transmitter plate circuit	15
7-1 7-2 7-3	C-255	Capacitor	Oil d-c or a-c 4 μf 600 v d-c	Vibrator buffers	4
10	T-358	Coil	Choke	Ripple filter in transmitter and microphone circuits	14
11	T-532	Coil	Choke	Ripple filter in transmitter plate circuit	14
20	E-40	Fuse	1/2 Amp. 3 AG	H. V. Output	11
21	E-66	Fuse	15 Amp. 250 V Cartridge	24 V Input	12
22	E-67	Fuse	30 Amp. 250 V Cartridge	12 V Input	12
	A-396	Fuse Panel Assembly	Panel, carrying input binding posts, fuse receptacles and 12-24 V switch	For input connections, replacement of fuses and switching from 12 and 24 V d-c source	14
19	R-46	Relay	12 v d-c Coil single pole, single throw, double break	Input power relay	9
13	W-55	Resistor	10 Ohm 1/2 Watt	Suppression network, vibrator actuating circuit	5
14-1 14-2	W-145	Resistor	5.4-.6 Ohm 50 Watt	Dropping resistor, transmitter filament circuit	6
15	W-146	Resistor	50,000 Ohms 8 Watts	Output resistor	5
16	W-150	Resistor	10 Ohm 2 Watt	Dividing network	5 or 7
17	W-151	Resistor	20 Ohm 10 Watt	Dropping resistor vibrator coil	5
18	W-152	Resistor	50 Ohm 10 Watt	Dropping resistor, relay coil	5
	S-75	Socket	6 Contact	Vibrator socket	10
	S-171	Socket	4 Contact	Rectifier tube socket	10
23	S-173	Socket SO-80	8 Pins, fits PL-150 or PL-160	Power connections	13
8	T-873	Transformer	Power	H. V. and rectifier filament supply	14
9	T-930	Transformer	Splitting	Equalize load on vibrator contacts	14
12	H-86	Tube RK-60	Rectifier	Rectifier d-c output	8
1	AA-1019	Vibrator	12 V Coil 120 Cycles	To change the input current from d-c to a-c and apply to a transformer	14

LIST OF MANUFACTURERS

Code No.	*Name*	*Address*	*Electronic No.*	*Mfr. Type No.*
1.	Aerovox Corp.	New Bedford, Mass.	C-43	SPNO5
			C-125	EPMO7
2.	John E. Fast Co.	Chicago, Ill.	C-113	X-3155
3.	Industrial Condenser Corp.	1725 W. North Ave. Chicago, Ill.	C-237	CO4
4.	Electric Utilities Co.	2900 S. Michigan Ave. Chicago, Ill.	C-255	
5.	International Resistance Corp.	401 N. Broad St. Philadelphia, Penna.	W-146	Type D6
			W-150	
			W-151	
			W-152	Type AB
6.	Muter Co.	1255 S. Michigan Ave. Chicago, Ill.	W-145	
7.	Wirt Co.	Philadelphia, Penna.	W-150	
8.	Raytheon Mfg. Co.	190 Willow St. Waltham, Mass.	H-86	RK-60
9.	Cutler-Hammer Mfg. Co.	12th St. & St. Paul Ave. Milwaukee, Wis.	R-46	6001H376
10.	American Phenolic Corp.	1250 N. Van Buren St. Chicago, Ill.	S-75	MIP6
			S-171	RSS4
11.	Littelfuse Laboratories, Inc.	4238 Lincoln Ave. Chicago, Ill.	E-40	1/2 Amp. 3 AG
12.	Trico Fuse Mfg. Co.	Milwaukee, Wis.	E-66	No. 153 Kantarks
			E-67	No. 303 Kantarks
13.	Rauland Corp.	4245 N. Knox Ave. Chicago, Ill.	S-173	SO-80
14.	Electronic Laboratories	122 W. New York St. Indianapolis, Ind.	A-396	A-396
			T-358	T-358
			T-532	T-532
			T-873	T-873
			T-930	T-930
15.	The Potter Co.	Chicago, Ill.	C-250	

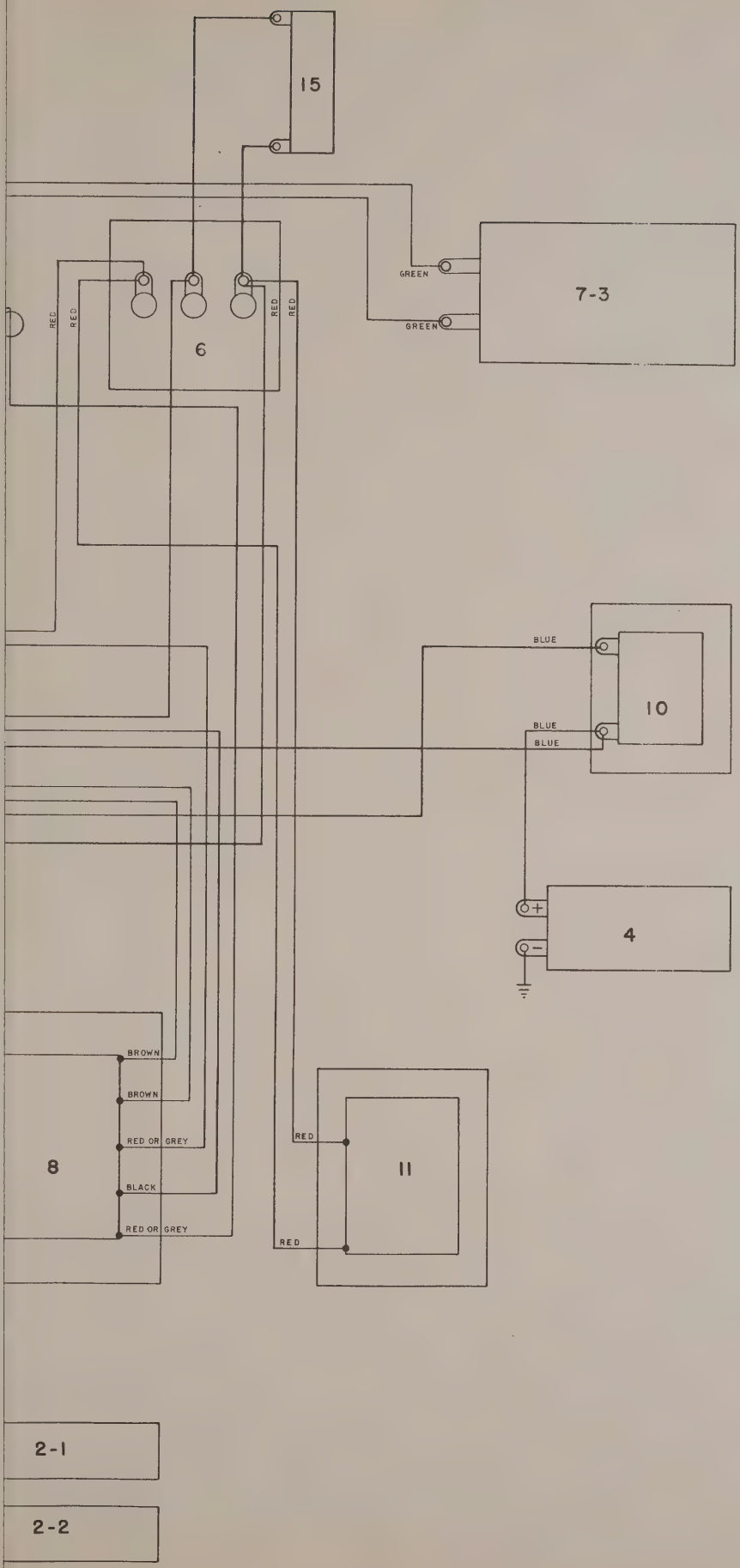


FIG. 4—VIBRATOR UNIT PE-125-BX, WIRING DIAGRAM

LIST OF MANUFACTURERS

Code No.	*Name*	*Address*	*Electronic No.*	*Mfr. Type No.*
1.	Aerovox Corp.	New Bedford, Mass.	C-43	SPNO5
			C-125	EPMO7
2.	John E. Fast Co.	Chicago, Ill.	C-113	X-3155
3.	Industrial Condenser Corp.	1725 W. North Ave. Chicago, Ill.	C-237	CO4
4.	Electric Utilities Co.	2900 S. Michigan Ave. Chicago, Ill.	C-255	
5.	International Resistance Corp.	401 N. Broad St. Philadelphia, Penna.	W-146	Type D6
			W-150	
			W-151	
			W-152	Type AB
6.	Muter Co.	1255 S. Michigan Ave. Chicago, Ill.	W-145	
7.	Wirt Co.	Philadelphia, Penna.	W-150	
8.	Raytheon Mfg. Co.	190 Willow St. Waltham, Mass.	H-86	RK-60
9.	Cutler-Hammer Mfg. Co.	12th St. & St. Paul Ave. Milwaukee, Wis.	R-46	6001H376
10.	American Phenolic Corp.	1250 N. Van Buren St. Chicago, Ill.	S-75	MIP6
			S-171	RSS4
11.	Littelfuse Laboratories, Inc.	4238 Lincoln Ave. Chicago, Ill.	E-40	1/2 Amp. 3 AG
12.	Trico Fuse Mfg. Co.	Milwaukee, Wis.	E-66	No. 153 Kantarks
			E-67	No. 303 Kantarks
13.	Rauland Corp.	4245 N. Knox Ave. Chicago, Ill.	S-173	SO-80
14.	Electronic Laboratories	122 W. New York St. Indianapolis, Ind.	A-396	A-396
			T-358	T-358
			T-532	T-532
			T-873	T-873
			T-930	T-930
15.	The Potter Co.	Chicago, Ill.	C-250	

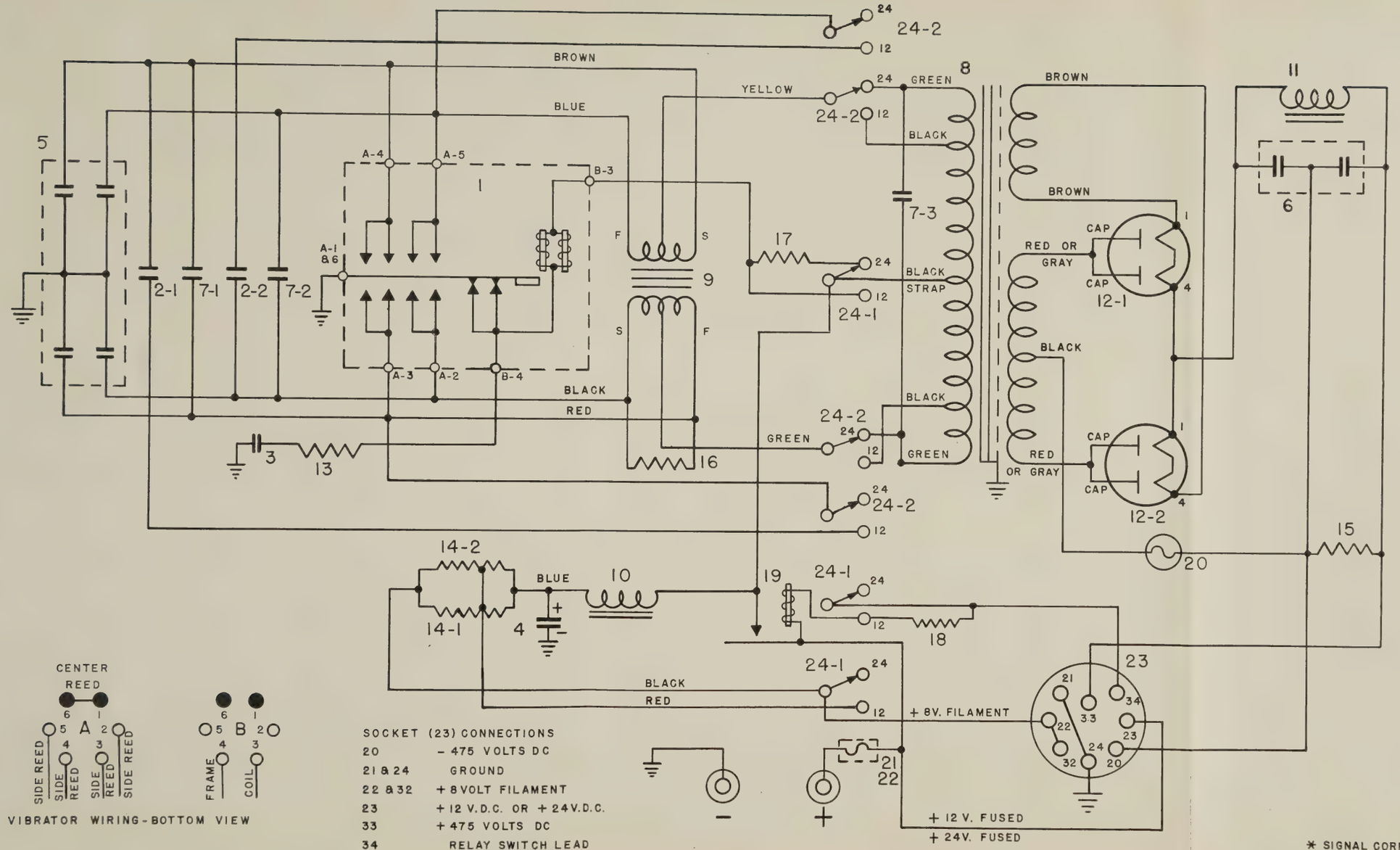
FIG. 4—VIBRATOR UNIT PE-125-BX, WIRING DIAGRAM

FIG. 5—VIBRATOR UNIT PE-125-BX, SCHEMATIC DIAGRAM

APPARATUS LEGEND

PART	TYPE	DESCRIPTION	QUAN.
1	MTS-1019	VIBRATOR	(1)
2	C-43	CAPACITOR 8 TO 11 μf 110 VOLTS AC	(2)
3	C-113	CAPACITOR .5 μf 50 VOLTS DC	(1)
4	C-125	CAPACITOR 300 μf 35 VOLTS DC	(1)
5	C-237	CAPACITOR .25-.25-.25-.25 μf 50 VOLTS AC	(1)
6	C-250	CAPACITOR 4-4 μf 800 VOLTS DC	(1)
7	C-255	CAPACITOR 4 μf 600 VOLTS DC	(3)
8	T-873	TRANSFORMER	(1)
9	T-930	TRANSFORMER	(1)
10	T-358	CHOKE	(1)
11	T-532	CHOKE	(1)
12	H-86	TUBE RK-60	(2)
13	W-55	RESISTOR 10 Ω $\frac{1}{2}$ WATT	(1)
14	W-145	RESISTOR 5.4-.6 Ω	(2)
15	W-146	RESISTOR 50,000 Ω 8 W	(1)
16	W-150	RESISTOR 10 Ω 2 WATT	(1)
17	W-151	RESISTOR 20 Ω 10 WATT	(1)
18	W-152	RESISTOR 50 Ω 10 WATT	(1)
19	R-46	RELAY	(1)
20	E-40	FUSE $\frac{1}{2}$ AMP. 3AG	(1)
21	E-66	FUSE 15 AMP. FOR 24 V. OPERATION	(1)
22	E-67	FUSE 30 AMP. FOR 12 V. OPERATION	(1)
*23	SO-80	SOCKET	(1)
24	E-63	SWITCH – 4 POLE DOUBLE THROW	(2)

* SIGNAL CORPS PART NUMBER. OTHER TYPE NUMBERS REFER TO ELECTRONIC LABORATORIES TYPE NUMBERS.



APPARATUS LEGEND

PART	TYPE	DESCRIPTION	QUAN.
1	MTS-1019	VIBRATOR	(1)
2	C-43	CAPACITOR 8 TO 11 μf 110 VOLTS AC	(2)
3	C-113	CAPACITOR .5 μf 50 VOLTS DC	(1)
4	C-125	CAPACITOR 300 μf 35 VOLTS DC	(1)
5	C-237	CAPACITOR .25 - .25 - .25 - .25 μf 50 VOLTS AC	(1)
6	C-250	CAPACITOR 4-4 μf 800 VOLTS DC	(1)
7	C-255	CAPACITOR 4 μf 600 VOLTS DC	(3)
8	T-873	TRANSFORMER	(1)
9	T-930	TRANSFORMER	(1)
10	T-358	CHOKE	(1)
11	T-532	CHOKE	(1)
12	H-86	TUBE RK-60	(2)
13	W-55	RESISTOR 10 Ω 1/2 WATT	(1)
14	W-145	RESISTOR 5.4 - .6 Ω	(2)
15	W-146	RESISTOR 50,000 Ω 8 W	(1)
16	W-150	RESISTOR 10 Ω 2 WATT	(1)
17	W-151	RESISTOR 20 Ω 10 WATT	(1)
18	W-152	RESISTOR 50 Ω 10 WATT	(1)
19	R-46	RELAY	(1)
20	E-40	FUSE 1/2 AMP. 3AG	(1)
21	E-66	FUSE 15 AMP. FOR 24 V. OPERATION	(1)
22	E-67	FUSE 30 AMP. FOR 12 V. OPERATION	(1)
*23	SO-80	SOCKET	(1)
24	E-63	SWITCH - 4 POLE DOUBLE THROW	(2)

* SIGNAL CORPS PART NUMBER. OTHER TYPE NUMBERS REFER TO ELECTRONIC LABORATORIES TYPE NUMBERS.

FIG. 5—VIBRATOR UNIT PE-125-BX, SCHEMATIC DIAGRAM

FIG. 6—VIBRATOR UNIT PE-125-BX, OUTLINE DRAWING

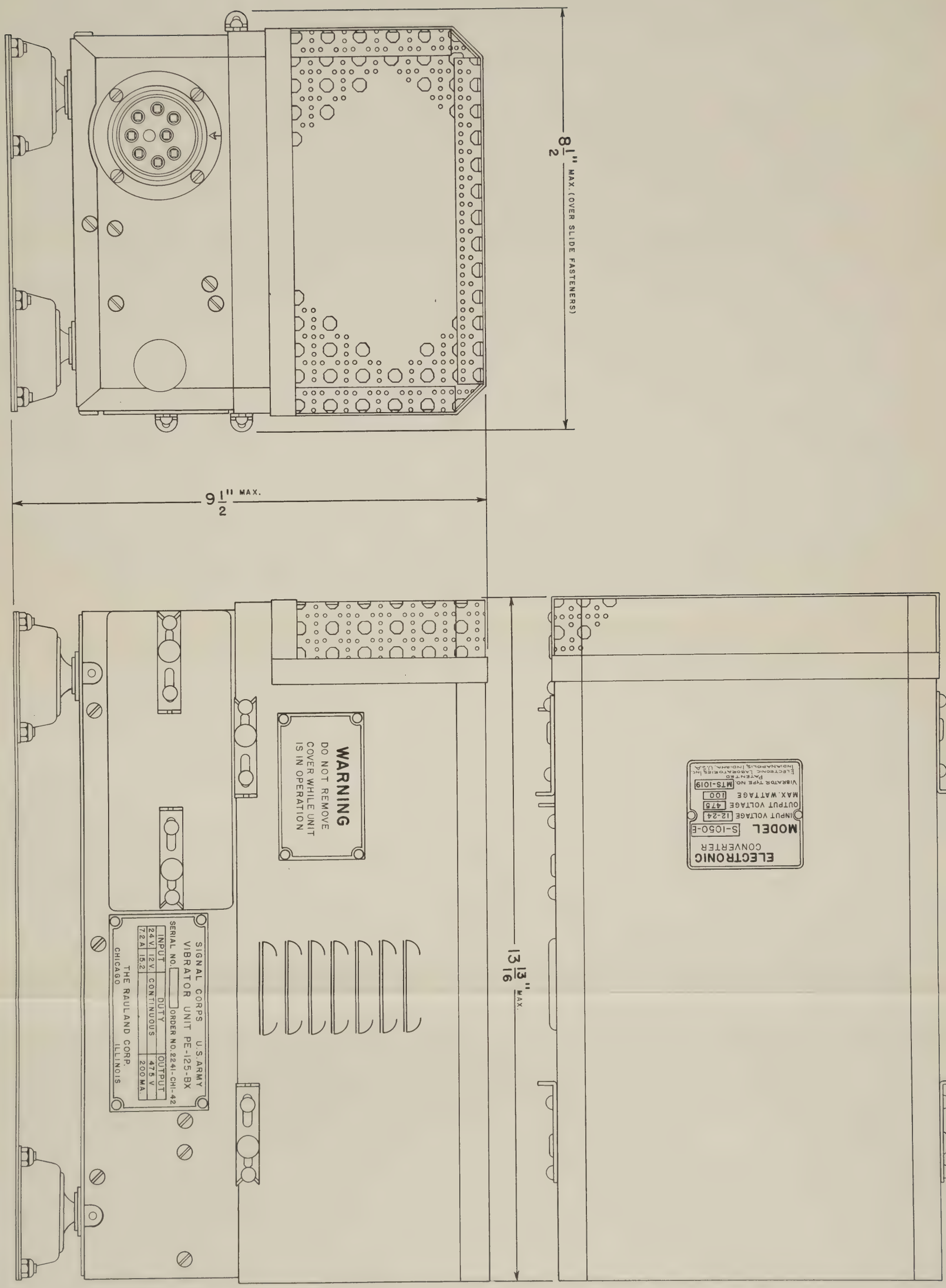
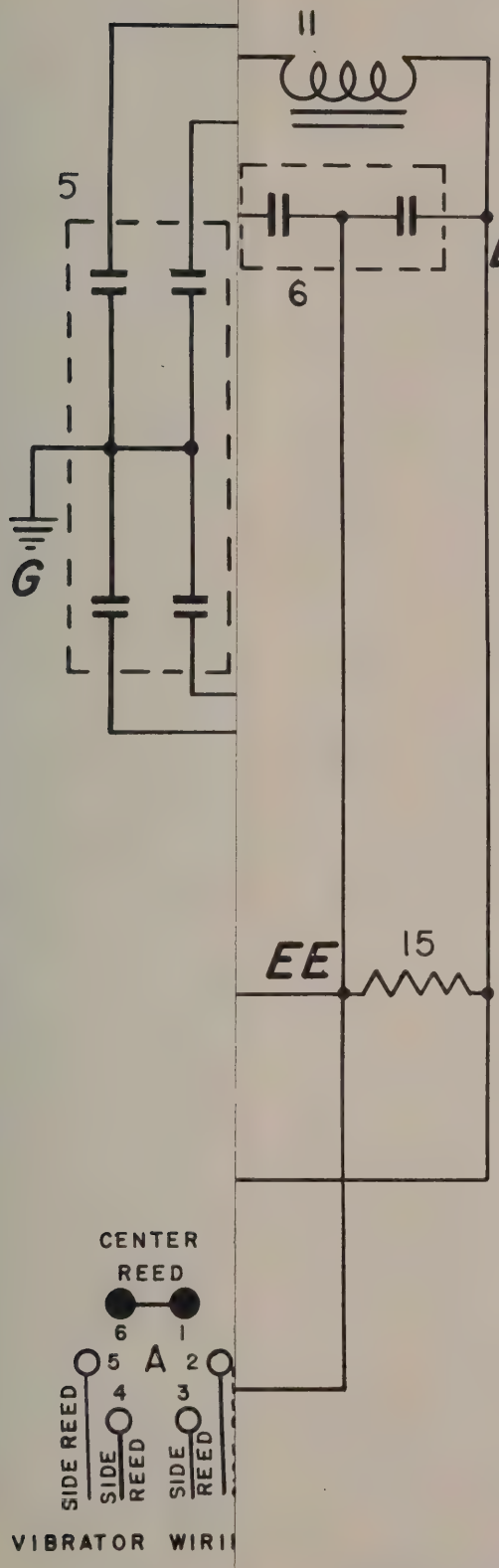


FIG. 6—VIBRATOR UNIT PE-125-BX, OUTLINE DRAWING

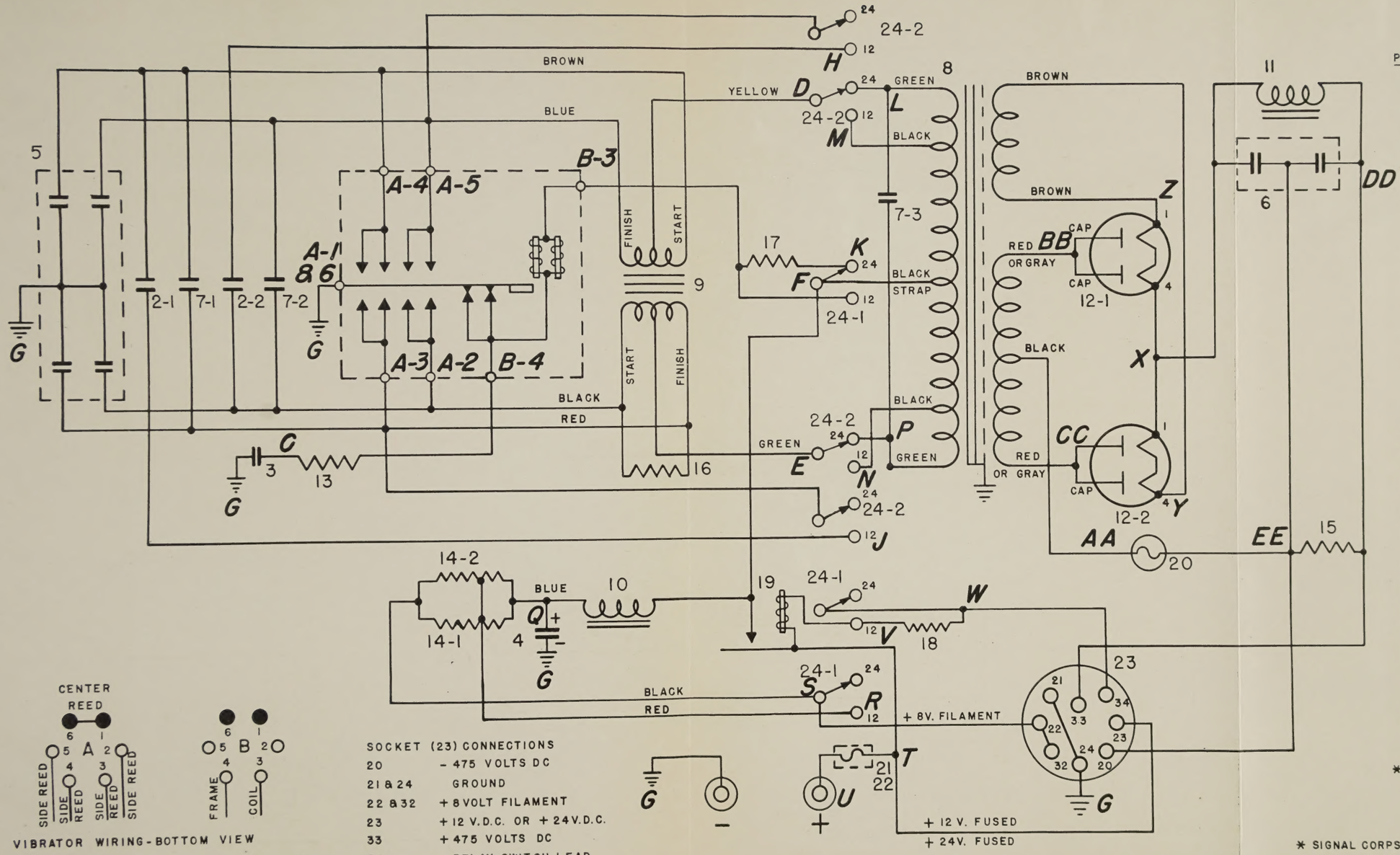


APPARATUS LEGEND

PART	TYPE	DESCRIPTION	QUAN.
1	MTS-1019	VIBRATOR	(1)
2	C-43	CAPACITOR 8 TO 11 μf 110 VOLTS AC	(2)
3	C-113	CAPACITOR .5 μf 50 VOLTS DC	(1)
4	C-125	CAPACITOR 300 μf 35 VOLTS DC	(1)
5	C-237	CAPACITOR .25-.25-.25-.25 μf 50 VOLTS AC	(1)
6	C-250	CAPACITOR 4-4 μf 800 VOLTS DC	(1)
7	C-255	CAPACITOR 4 μf 600 VOLTS DC	(3)
8	T-873	TRANSFORMER	(1)
9	T-930	TRANSFORMER	(1)
10	T-358	CHOKE	(1)
11	T-532	CHOKE	(1)
12	H-86	TUBE RK-60	(2)
13	W-55	RESISTOR 10 Ω $\frac{1}{2}$ WATT	(1)
14	W-145	RESISTOR 5.4-.6 Ω	(2)
15	W-146	RESISTOR 50,000 Ω 8 W	(1)
16	W-150	RESISTOR 10 Ω 2 WATT	(1)
17	W-151	RESISTOR 20 Ω 10 WATT	(1)
18	W-152	RESISTOR 50 Ω 10 WATT	(1)
19	R-46	RELAY	(1)
20	E-40	FUSE $\frac{1}{2}$ AMP. 3AG	(1)
21	E-66	FUSE 15 AMP. FOR 24 V. OPERATION	(1)
22	E-67	FUSE 30 AMP. FOR 12V. OPERATION	(1)
*23	SO-80	SOCKET	(1)
24	E-63	SWITCH - 4 POLE DOUBLE THROW	(2)

* SIGNAL CORPS PART NUMBER. OTHER TYPE NUMBERS REFER TO ELECTRONIC LABORATORIES TYPE NUMBERS.

FIG. 7—VIBRATOR UNIT PE-125-BX, TEST SCHEMATIC DIAGRAM



VIBRATOR WIRING-BOTTOM VIEW

SOCKET (23) CONNECTIONS

20	- 475 VOLTS DC
21 & 24	GROUND
22 & 32	+ 8 VOLT FILAMENT
23	+ 12 V.D.C. OR + 24 V.D.C.
33	+ 475 VOLTS DC
34	RELAY SWITCH LEAD

APPARATUS LEGEND

PART	TYPE	DESCRIPTION	QUAN.
1	MTS-1019	VIBRATOR	(1)
2	C-43	CAPACITOR 8 TO 11 μf 110 VOLTS AC	(2)
3	C-113	CAPACITOR .5 μf 50 VOLTS DC	(1)
4	C-125	CAPACITOR 300 μf 35 VOLTS DC	(1)
5	C-237	CAPACITOR .25 - .25 - .25 - .25 μf 50 VOLTS AC	(1)
6	C-250	CAPACITOR 4-4 μf 800 VOLTS DC	(1)
7	C-255	CAPACITOR 4 μf 600 VOLTS DC	(3)
8	T-873	TRANSFORMER	(1)
9	T-930	TRANSFORMER	(1)
10	T-358	CHOKE	(1)
11	T-532	CHOKE	(1)
12	H-86	TUBE RK-60	(2)
13	W-55	RESISTOR 10 Ω ½ WATT	(1)
14	W-145	RESISTOR 5.4 - .6 Ω	(2)
15	W-146	RESISTOR 50,000 Ω 8 W	(1)
16	W-150	RESISTOR 10 Ω 2 WATT	(1)
17	W-151	RESISTOR 20 Ω 10 WATT	(1)
18	W-152	RESISTOR 50 Ω 10 WATT	(1)
19	R-46	RELAY	(1)
20	E-40	FUSE ½ AMP. 3AG	(1)
21	E-66	FUSE 15 AMP. FOR 24 V. OPERATION	(1)
22	E-67	FUSE 30 AMP. FOR 12 V. OPERATION	(1)
*23	SO-80	SOCKET	(1)
24	E-63	SWITCH - 4 POLE DOUBLE THROW	(2)

* SIGNAL CORPS PART NUMBER. OTHER TYPE NUMBERS REFER TO ELECTRONIC LABORATORIES TYPE NUMBERS.

FIG. 7—VIBRATOR UNIT PE-125-BX, TEST SCHEMATIC DIAGRAM